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(to be used for all correspondence after initial filing)

Application Number	09/648,006
Filing Date	08/03/1998
First Named Inventor	Daniel Nepela
Art Unit	2832
Examiner Name	Karl D. Easthom
Attorney Docket Number	A26996D2 (RR1334D2)

Total Number of Pages in This Submission

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ENCLOSURES *(Check all that apply)*

- [✓] Fee Transmittal Form
- [ ] Fee Attached
- [ ] Amendment/Reply
- [ ] After Final
- [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
- [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
- [ ] After Allowance communication to Group
- [ ] Appeal Communication to Board of Appeals and Interferences
- [✓] Appeal Communication to Group **(Appeal Notice, Brief, Reply Brief)**
- [ ] Assignment Recordation documents
- [✓] Petition for Extension of Time
- [ ] Other Enclosure(s) (please Identify below):

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Firm or Individual name	Samuel A. Kassatly
Signature	
Date	07/06/2004

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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 660

Complete if Known	
Application Number	09/648,006
Filing Date	08/03/1998
First Named Inventor	Daniel Nepela
Examiner Name	Karl D. Easthom
Art Unit	2832
Attorney Docket No.	A26996D2 (RR1334D2)

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☑ Deposit Account:

Deposit Account Number: 23-1055

Deposit Account Name: Western Digital Corporation

The Director is authorized to: *(check all that apply)*

☑ Charge fee(s) indicated below ☑ Credit any overpayments

☑ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below	Fee Paid
Total Claims	-20** =	0	X	$18	=0
Independent Claims	-3** =	0	X	$86	=0
Multiple Dependent				$290	=0

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	330
1402	330	2402	165	Filing a brief in support of an appeal	330
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 660

BOARD OF PATENT APPEALS AND INTERFERENCES
2004 JUL 13 P 12:59

SUBMITTED BY				(Complete *(if applicable)*)	
Name (Print/Type)	Samuel A. Kassatly	*Registration No. (Attorney/Agent)*	32,247	*Telephone*	408-323-5111
Signature				*Date*	07/06/2004

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Title: "Methods and Compositions for Optimizing Interfacial Properties of Magnetoresistive Sensors"

Applicant(s): Daniel Nepela

Attorney Docket No.: A26996D2 (RR1334D2)

Serial No.:	09/648,006	**Examiner:**	Karl D. Easthom
Filed:	08/03/1998	**Art Unit:**	2832

Board of Patent Appeals and Interferences
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

APPEAL BRIEF

Dear Sir:

This appeal brief is submitted under 35 U.S.C. §134. This appeal is further to Appellants' Notice of Appeal that is attached hereto.

Table of Contents

(1) Real Party in Interest

The real party in interest is Western Digital, Inc.

(2) Related Appeals / Interferences

No other appeals or interferences exist that relate to the present application or appeal.

(3) Status of Claims

Claims 7 and 10 are pending and remain in the application. In the Final Office Action of February 10, 2004, claims 7 and 10 were indicated to be finally rejected as being unpatentable over Iwasaki et al., U.S. Patent No. 5,698,335, hereafter Iwasaki.

(4) Status of Amendments

No amendments are outstanding.

(5) Summary of Invention

The present invention relates in general to a method of optimizing the interfacial properties of magnetoresistive sensors. More specifically, the present invention relates to a method of making a magnetoresistive sensor that is formed with an electrically conductive spacer interposed between a first and a second ferromagnetic layer.

The method comprises the steps of selecting a first material having a first eletronegativity for the first ferromagnetic layer; selecting a second material having a second electronegativity for the electrically conductive spacer; and selecting a third material having a third electronegativity for

the second ferromagnetic layer. The absolute value of a difference between the first and second electronegativities is minimized, wherein the first material and the second material comprise substantially the same crystal structure, wherein the first material comprises a first face centered cubic material and the second material comprises a second face centered cubic material.

In a preferred embodiment, the second material is selected from a group consisting of Ag_3Pt, $AgPt_3$, Cu_3Pt, CuPt, $CuPt_3$, Cu_3Pt_5, Cu_3Au, Cu_3Pd, CuPd, $CrIr_3$, Cr_2Pt, and mixtures of these materials.

(6) Issue Presented for Review

The issue for review is whether claims 7 and 10 are anticipated by Iwasaki.

(7) Grouping of Claims

Claims 7 and 10 are grouped together and stand and fall together.

(8) Arguments

A. Rejection in the Office Action

The issue under review is whether claims 7 and 10 are anticipated by Iwasaki. As ground for the anticipation rejection of claims 7 and 10, the office action presents the following arguments:

"1. Claims 7 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Iwasaki et al. The claimed invention is disclosed at Example 28 for example, where a first and second ferromagnetic layer with FCC first and third materials of CoFe with layer second layer Cu, which has an FCC structure (according to applicant's Appendix A) where the absolute value of electronegative is minimized with respect to another layer such as Ag or

Co. That is, a higher absolute value of difference in electronegativity would occur for one of those since they are on either side of the scale in electronegativity with respect to Cu, and only three cases exist for the electronegativity of CoFe: electronegativity 0 (possible CoFe) Ag (possible CoFe) Cu (possible CoFe) Co (possible CoFe) electronegativity high. In any case, the difference between the possible CoFe electronegativity and that for Cu, since it lays between Ag and Co in electronegativity, is less than that for one of either Ag or Co, so that the difference involving Cu is minimized with respect to using one of them. The method does not require one to minimize based upon the electronegativity difference, only to select FCC layers, and that the layers have a minimized relationship, after the selection, regardless of the basis used for selection. For claim 10, Cu Pd is disclosed at col. 3, lines 35-55."

Applicants respectfully traverse this rejection and submit that claims 7 and 10 are not anticipated by Iwasaki, and are patentable thereover. In support of this position, Applicants submit the following arguments:

B. Iwasaki

Example 28 that was cited by the Examiner in support of the anticipation rejection reads are follows:

> "EXAMPLE 28
>
> A magnetoresistance effect element was manufactured following the same procedures as in Example 26 except that a (2 nm Cu/1 nm Co_{90} $Fe_{10})_{16}$ film was used as a stacked film.
>
> When the film thickness of the Cu film was increased to 2 nm as described above, the resistance change rate was approximately 25% when a current was flowed in the direction of the (100) axis, and approximately 19% when the current was flowed in the direction of the (110) axis. This indicates that the direction dependency of the resistance change rate was held even when the film thickness of the Cu film was increased. Also in this case, two peaks were found in the (100) axis as shown in FIG. 50B and one peak was found in the (110) axis as shown in FIG. 50A on the rocking curves of the principal growth plane (the fcc-phase (220) plane).
>
> Even when the film thicknesses of the Cu film and the Co_{90} Fe_{10} film were changed to 0.3 nm to 10 nm, respectively, in the above

arrangement, the above tendency of the rocking curve remained unchanged, i.e., the fluctuation was larger in the (100) axis. The resistance change rate was also higher in the (100) axis.

In addition, even when the stacking number was changed from 2 to 70 in the above arrangement, the tendencies of both the rocking curve and the resistance change rate still remained the same; that is, a larger resistance change was obtained when a sense current was flowed in the direction of the (100) axis." Reference is made to column 27, lines 31-61.

C. Legal Standard for Lack of Novelty (Anticipation)

The standard for lack of novelty, that is for "anticipation," is one of strict identity. To anticipate a claim for a patent, a **single prior source must contain** all its essential elements, and the burden of proving such anticipation is on the party making such assertion of anticipation. Anticipation cannot be shown by combining more than one reference to show the elements of the claimed invention. The amount of newness and usefulness need only be minuscule to avoid a finding of lack of novelty.

The following are two court opinions in support of Applicant's position of non anticipation, with emphasis added for clarity purposes:

- "Anticipation under Section 102 can be found only if a reference shows **exactly** what is claimed; where there are **differences** between the reference disclosures and the claim, a rejection must be based on obviousness under Section 103." *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

- "**Absence** from a cited reference **of any element** of a claim of a patent negates anticipation of that claim by the reference." *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986), on rehearing, 231 USPQ 160 (Fed. Cir. 1986).

D. Application of the Legal Standard of Anticipation to Claims 7 and 10

As is abundantly clear from the Iwasaki excerpt above (Example 28), Iwasaki is not concerned with "electronegativity". In fact, the term electronegativity is not even mentioned at all in the Iwasaki patent. Rather, Iwasaki appears to specify certain orientations of the easy axis of magnetization. Iwasaki specifies, for example, that magnesium oxide may be used as a substrate material in order to cause an overlying magnetic layer to have a preferred crystal orientation that will, in turn, lead to a preferred easy axis of magnetization. The electronegativity conclusions drawn by the examiner on page 3 of his office action can not be inferred from the Iwasaki disclosure, as electronegativity is neither explicitly nor inherently disclosed.

To conclude, independent claim 7 is not anticipated by Iwasaki, and as a result, claim 7 and its dependent claim 10 are allowable, and such allowance is respectfully requested.

(9) Cancellation of Claims 12, 14, 15, 20, 24, 38, 39, 47, 48, 50, 56, 66, 79, 82

Applicants hereby cancel claims 12, 14, 15, 20, 24, 38, 39, 47, 48, 50, 56, 66, 79, and 82 without prejudice, leaving only claims 7 and 10 on file.

(10) Response to Rejection Under 35 USC 112, First Paragraph

Claims 14 - 15 were rejected under 35 USC 112, First Paragraph. This rejection has now become moot in view of the cancellation of claims 14 and 15 without prejudice.

Respectfully submitted,

Date: July 6, 2004

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APPENDIX A

CLAIMS ON APPEAL

7. A method of making a magnetoresistive sensor formed with an electrically conductive spacer interposed between a first and a second ferromagnetic layer, comprising the steps of:

selecting a first material having a first eletronegativity for said first ferromagnetic layer;

selecting a second material having a second electronegativity for said electrically conductive spacer; and

selecting a third material having a third electronegativity for said second ferromagnetic layer;

wherein an absolute value of a difference between said first and second electronegativities is minimized, wherein said first material and said second material comprise substantially the same crystal structure, wherein said first material comprises a first face centered cubic material and said second material comprises a second face centered cubic material.

10. The method of claim 7, wherein said step of selecting said second material includes the step of selecting said material from a group consisting of Ag_3Pt, $AgPt_3$, Cu_3Pt, CuPt, $CuPt_3$, Cu_3Pt_5, Cu_3Au, Cu_3Pd, CuPd, $CrIr_3$, Cr_2Pt, and mixtures of said materials.